

Serial No. 09/890,471
Docket No. BERG 99.01 CIP
Amendment G Under Rule 116

REMARKS

Turning first to the Examiner's §112 rejections, the features of claims 46, 47, 51 and 52 are adequately disclosed on page 7, lines 6-31 and in Figs. 10 and 11. Thus, it is believed these rejections are in error..

Turning to the art rejections, the rejection of claims 41, 46 and 47 under 35 USC §103(a) as being unpatentable over Nacci et al. (US Patent No. 4,359,516) in view of Johnson (US Patent No. 4,501,638), Michaelson (US Patent No. 4,581,301) and Drummond et al. (US Patent No. 5,132,248) is improper. Applicant's independent claim 41 involves using a mask to remove conductive layers from the top and bottom of a circuit board to form a plurality of first void areas ... and second void areas.

The Examiner's primary reference, Nacci et al., teaches a process for forming a circuit board using a magnetic image transfer of resist onto a conductive surface to form a circuit pattern, etching the conductive surface to form the circuit, plating the non-resist covered areas, and removing the resist and etching the formerly resist covered areas. (Col. 10, line 66 - Col. 11, line 9; Abstract). Nowhere does Nacci et al. teach the formation of a void area in the top and bottom layers, in areas which were plated.

None of the other applied references teach this feature. Johnson teaches a dielectric substrate that is metal clad on both sides (Column 2 Lines 21 – 24). A resist pattern is then formed on one side with voids where the through holes should be and the metal layer is chemically etched on this side of the substrate to expose an area of the dielectric where hole formation shall occur (col. 2, lines 35-48). Through holes are made in the exposed dielectric substrate by chemically etching the dielectric material (col. 1, lines 38-44). The metal layer on the opposing side of the substrate stops this etching process. Michaelson teaches starting with a

HAYES SOLOWAY P.C.
3450 E. SUNRISE DRIVE
SUITE 140
TUCSON, AZ 85718
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

PAGE 15/18 * RCVD AT 4/10/2006 5:25:44 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-2/13 * DNIS:2738300 * CSID:520 8827643 * DURATION (mm:ss):04:58

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non conductive substrate to which a plating seed layer is applied by screening onto selected areas corresponding to where the conductive pattern is to appear. Michaelson then electroplates both sides of the conductive seeded pattern and the pre-drilled through holes with copper thereby forming the circuit. (Col. 7, line 49 - Col. 8, line 61). Drummond et al. teaches using inks for printing circuit boards (abstract). Nowhere does Drummond et al. teach void forming. Therefore, no combination of Nacci et al., Michaelson, Johnson or Drummond et al. achieves or renders obvious Applicant's claims 41, 46 or 47, nor any claims dependent thereon.

The Examiner rejects several of the claims as obvious from various art combinations involving Johnson, Michaelson and Drummond et al., including: (1) claims 42-45 as obvious from Nacci et al. in view of Johnson, Michaelson and Drummond et al. and further in view of Lowe et al.; (2) claims 48 and 51-59 as obvious from Nacci et al., Johnson, Michaelson, Drummond et al. and further in view of Takahashi et al.; and (3) claims 49 and 50 as obvious from Nacci et al. in view of Johnson, Michaelson, Drummond et al., and Takahashi et al. and further in view of Lowe et al. Claims 42-45 depend on claim 41. Independent claim 48 includes many of the features of claim 41, and the impropriety of combining Nacci et al., Johnson, Michaelson, and Drummond et al. is discussed above. Accordingly, no combination of Nacci et al., Johnson, Michaelson, Drummond et al., Takahashi et al. and Lowe et al. could achieve or render obvious claims 41, 48 or claims 42-45, 49-50 and 53-59, which depend thereon.

The foregoing Amendment makes no claim changes as would require a further search. Accordingly, entry of the foregoing Amendment and allowance of the Application are respectively requested.

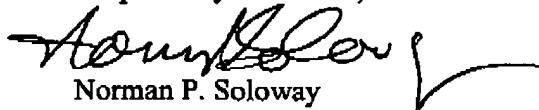
HAYES SOLOWAY P.C.
3450 E. SUNRISE DRIVE
SUITE 140
TUCSON, AZ 85718
TEL. 520.882.7623
FAX. 520.882.7643

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MANCHESTER, NH 03101
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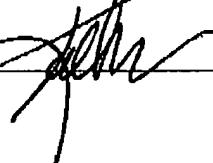
Respectfully submitted,



Norman P. Soloway
Attorney for Applicant
Reg. No. 24,315

CERTIFICATE OF TRANSMISSION VIA FACSIMILE

I hereby certify that this correspondence is being sent via facsimile to Examiner Roberts P. Culbert, Art Unit 1763, of the United States Patent and Trademark Office at facsimile number (571) 273-8300, on April 10, 2006, from Tucson, Arizona.

By 

NPS:WPO/dd:kg:kmg

HAYES SOLOWAY P.C.
3450 E. SUNRISE DRIVE
SUITE 140
TUCSON, AZ 85718
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
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